

CLAIMS

1. A method of manufacturing a silica glass member, comprising:

5 a first step of making a silicon compound react in oxyhydrogen flame using a burner having a multi-tubular structure to obtain fine silica glass particles;

10 a second step of depositing the fine silica glass particles on a support rotating and placed to oppose the burner to obtain a silica glass ingot with a temperature distribution in at least one plane perpendicular to a rotational axis of the silica glass ingot, the temperature distribution being symmetrical with respect to the rotational axis and having a maximal value between a center and a peripheral portion of the plane; and

15 a third step of obtaining a distribution of signed birefringence values on the basis of birefringence values and directions of phase advance axes measured at a plurality of points in the plane perpendicular to the rotational axis of the silica glass ingot and cutting, 20 from the silica glass ingot, a silica glass member whose signed birefringence values monotonously increase from the center to the peripheral portion of the plane.

25 2. A manufacturing method according to claim 1, wherein in the second step, a difference between the maximal value and a temperature at the center of the

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plane exceeds 0°C and is not more than 200°C.

3. A method of manufacturing a silica glass member, comprising:

5 a fourth step of heating a silica glass ingot to a predetermined temperature;

10 a fifth step of cooling the silica glass ingot with a temperature distribution in at least one plane perpendicular to a rotational axis of the silica glass ingot, the temperature distribution being symmetrical with respect to the rotational axis and having a maximal value between a center and a peripheral portion of the plane; and

15 a sixth step of obtaining a distribution of signed birefringence values on the basis of birefringence values and directions of phase advance axes measured at a plurality of points in the plane perpendicular to the rotational axis of the silica glass ingot and cutting, from the silica glass ingot, a silica glass member whose signed birefringence values monotonously increase from the center to the peripheral portion of the plane.

20 4. A manufacturing method according to claim 3, wherein in the fifth step, a difference between the maximal value and a temperature at the center of the plane is 20°C to 300°C.

25 5. A silica glass member having a distribution of signed birefringence values which monotonously increase

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from a center to a peripheral portion of the plane,
said silica glass member being obtained by a
manufacturing method comprising:

5 a first step of making a silicon compound react in
oxyhydrogen flame using a burner having a multi-tubular
structure to obtain fine silica glass particles;

10 a second step of depositing the fine silica glass
particles on a support rotating and placed to oppose
the burner to obtain a silica glass ingot with a
temperature distribution in at least one plane
perpendicular to a rotational axis of the silica glass
ingot, the temperature distribution being symmetrical
with respect to the rotational axis and having a
maximal value between the center and the peripheral
15 portion of the plane; and

20 a third step of obtaining a distribution of signed
birefringence values on the basis of birefringence
values and directions of phase advance axes measured at
a plurality of points in the plane perpendicular to the
rotational axis of the silica glass ingot and cutting,
from the silica glass ingot, a silica glass member
whose signed birefringence values monotonously increase
from the center to the peripheral portion of the plane.

25 6. A silica glass member according to claim 5,
wherein in the second step, a difference between the
maximal value and a temperature at the center of the

plane exceeds 0°C and is not more than 200°C.

5 7. A silica glass member having a distribution of signed birefringence values, in which the signed birefringence values monotonously increase from a center to a peripheral portion of the plane, said silica glass member being obtained by a manufacturing method comprising:

a fourth step of heating a silica glass ingot to a predetermined temperature;

10 a fifth step of cooling the silica glass ingot with a temperature distribution in at least one plane perpendicular to a rotational axis of the silica glass ingot, the temperature distribution being rotationally symmetrical with respect to the center of the plane and having a maximal value between the center and the peripheral portion of the plane; and

15 a sixth step of obtaining a distribution of signed birefringence values on the basis of birefringence values and directions of phase advance axes measured at a plurality of points in the plane perpendicular to the rotational axis of the silica glass ingot and cutting, from the silica glass ingot, a silica glass member whose signed birefringence values monotonously increase from the center to the peripheral portion of the plane.

20 25 8. A silica glass member according to claim 7, wherein in the fifth step, a difference between the

maximal value and a temperature at the center of the plane is 20°C to 300°C.

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